

WHAT IS CLAIMED IS:

1. A multifunctional multi-tap (concent) of intercepting a stand-by electric power comprising:

an over-current circuit breaker for detecting and intercepting an over-current or a surge current generated due to an disorder of an appliance;

a power section for generating and outputting a motion voltage which is supplied to the parts inside of the multi-tap through the rectification, smoothing and voltage regulation process;

a motion condition setting part in which a user switches and sets the condition whether or not a sensor is used and whether an interlocking control or a single acting control is adopted, and which outputs the switching signal;

a sensor part for detecting a light or a body motion and outputting a signal accordingly;

a current detecting part for detecting a current flowing into an interacting or a single-acting appliance and outputting the detected signal;

a control part which receives the user's switching signal for the selection of the interlocking/single-acting function and the detected signal, determines the detected signal of the sensor, and outputs an on/off control signal for controlling the appliance, which is led into each lead-in hole, as a standby state or a power-saving state according

to the interlocking or single-acting condition;

and an output control part which receives the on/off control signal of the control part and supplies/intercepts the power current flowing into each lead-in holes.

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2. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein once the reason for the over-current is eliminated by the over-current interceptor, electric power is supplied again by the user's operation of a reset button.

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3. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the range of the interceptable over-current varies depending upon the over-current intercepting devices and can be predetermined and set at the initial manufacturing stage.

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4. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the power part comprises a down transformer for down-transforming a commercial alternating current power into a predetermined alternating current voltage, a bridge circuit for full-wave rectifying the transformed alternating current voltage, and a capacitor for smoothing the full-wave

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rectified alternating current voltage which is to be used as an operating voltage for driving a relay element of the output control.

5 5. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the operating voltage is a direct current voltage of 12V.

10 6. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, further comprising a constant voltage circuit for down-transforming the operation voltage into a predetermined level of direct current voltage, and outputting it to the
15 control part, the motion condition setting part and the sensor part.

 7. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim
20 6, wherein the predetermined level of direct current voltage is 5V.

 8. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim
25 1, wherein the power part generates a clock signal for driving

a timer built in the control part.

9. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the motion condition setting part consists of an array resistance and a switch, the switch being disposed outside of a outlet so that a user can choose whether an appliance corresponding to each of auxiliary lead-in holes is used in an interlocking condition or a single-acting condition.

10. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the sensor part includes an illumination sensor for detecting a resistance corresponding to illuminance and comparing the resistance with a reference illuminance to determine a change of illuminance, and a body-detecting sensor for blocking light according to the motion of a human body.

11. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the control part is initially set by receiving an on/off signal regarding the use of a sensor and by receiving an on/off signal regarding an option of interlocking or single-acting function, detects a change of illuminance and

a movement of a human body, detects a variation of a current flowing into each appliance, which is interlocked or single-acted and connected to an auxiliary lead-in hole, and outputs an on/off control signal to the output control part to induce the appliance to a standby state or a power saving state.

12. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein if the change of illuminance or the motion of a human body is not detected by the sensor part, a timer built in the control part operates to induce an appliance to a standby or power saving state.

13. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, further comprising a current adjusting switch for varying an amplification rate of the current flowing to an appliance, and outputs an on/off control signal to the control part accordingly so that the multi-tap (concent) can be compatible with various appliances with different capacities.

14. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 13, wherein the number of the current adjusting switch is

one or more.

15. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the output control part receives an on/off control signal according to the control operation of the control part and connects or disconnects a built-in relay so that the current flowing to an appliance, which is led into each lead-in hole, can be supplied or intercepted.

16. The multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 1, wherein the over-current interceptor, the power part, the motion condition setting part, the current detecting part, the control part, and the output control part can be installed within an appliance or a plug.

17. A control method of a multifunctional multi-tap (concent) of intercepting a stand-by electric power comprises the steps of:

a) determining whether there is a change in light by a sensor;

b) setting a main lead-in hole as a standby state, in case that there is a change in light as a result of the determination;

c) determining which auxiliary lead-in hole is interlocked or single-acted;

d) determining whether or not the main lead-in hole is currently used, in case that a predetermined number of auxiliary lead-in holes are interlocked as a result of step (c);

e) turning on all of the predetermined number of the interlocked auxiliary lead-in holes in case that the main lead-in hole is currently used as a result of step (d);

f) turning off all of the predetermined number of the interlocked auxiliary lead-in holes in case that the main lead-in hole is not currently used as a result of step (d); and

g) turning off all of the predetermined number of the single-acted auxiliary lead-in holes, in case that a predetermined number of auxiliary lead-in holes are single-acted as a result of step (c).

18. The control method of the multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 17, wherein the determination of the step (c) is made based on an on/off signal inputted according to a user's switching operation.

19. The control method of the multifunctional multi-tap

(concent) of intercepting a stand-by electric power according to claim 17, wherein the determination of the step (d) is made based on an on/off signal depending on an electric current flowing into the main lead-in hole.

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20. The control method of the multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 17, wherein, in the step (e), since the main lead-in hole, which has been in a standby state, is presently being
10 used, all predetermined number of auxiliary lead-in holes interlocked with the main lead-in hole are turned on.

21. The control method of the multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 17, further comprising the steps of:

15 1) operating the timer, in case that there is a change of illuminance, as a result of the step (a);

2) determining whether a predetermined time period of the timer has passed;

20 3) determining which auxiliary lead-in holes are interlocked or single-acted, in case that the predetermined time period has passed, as a result of the step (2);

25 4) determining whether the main lead-in hole is being used at present, in case that a predetermined number of the auxiliary lead-in holes are used with interlocking control, as a result of the step (3);

5) turning on all the predetermined number of the interlocked auxiliary lead-in holes including the main lead-in hole, if the main lead-in hole is presently being used, as a result of the step (4); and

5 6) turning off all the predetermined number of the interlocked auxiliary lead-in holes including the main lead-in hole, in case that the main lead-in hole is not being used at present, as a result of the step (4).

10 22. The control method of the multifunctional multi-tap (concent) of intercepting a stand-by electric power according to claim 21, further comprising the steps of:

 A) determining whether the predetermined number of the auxiliary lead-in holes which are single-acting are presently
15 being used, in case that a predetermined number of auxiliary lead-in holes are individually used while the main lead-in hole is not being used, as a result of the step (3);

 B) turning on all the predetermined number of the auxiliary lead-in holes, in case that the predetermined number
20 of the single-acting auxiliary lead-in holes are presently being used, as a result of the step (A); and

 C) turning off all the predetermined number of the auxiliary lead-in holes, in case that the predetermined number
25 of the single-acting auxiliary lead-in holes are not being used presently, as a result of the step (A).

23. The control method of the multifunctional multi-tap
(concent) of intercepting a stand-by electric power according
to claim 17, wherein the sensor includes not only an
illumination sensor for detecting the change of illuminance
5 but also a body-detecting sensor for detecting a movement
of a human body, both sensors being operated at the same
time.

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